

## **APPENDIX H - ESR AND NON-FIRE RESTORATION APPROACHES AND CONSIDERATIONS IN LOW-ELEVATION SHRUB, INVASIVE ANNUAL AND PERENNIAL GRASS**

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This section provides an overview of rehabilitation and restoration approaches, which are both presently directed in part by the Final Environmental Impact Statement – Vegetation Treatment on BLM Lands in Thirteen Western States (BLM 1991). Rehabilitation refers to post-wildfire activities subject to stipulations put forth in the interagency Emergency Stabilization and Rehabilitation (ESR) Handbook (<http://fire.r9.fws.gov/ifcc/Esr/handbook/>). Rehabilitation efforts are subject to funding limitations in any given fire year. Rehabilitation after wildland fire is part of all proposed alternatives, including the No Action Alternative.

"Restoration" in the planning area as part of the proposed action and alternatives is a broad term for proactive treatments, primarily intended to restore perennial structure to invasive annual grass-infested rangeland, usually using some native species. Restoration is a component of all alternatives. Restoration activities are presently under the direction of several documents, including the Final Environmental Impact Statement – Vegetation Treatment on BLM Lands in Thirteen Western States and the Great Basin Restoration Initiative's strategy. The BLM Districts cannot always use local native species and a full species component for a given ecological site. This is because: 1) usually the sites have been more or less modified from the ecological site potential and due to weed invasion, soil loss, etc., are susceptible to rapid re-invasion, and 2) locally-collected native species are not available for use on these sites. The native species used are cultivars developed from populations from the Intermountain region or the Pacific Northwest on the east side of the Cascades (usually eastern Washington).

Seedings done prior to the early 1990s were primarily crested wheatgrass in a mix with other exotics, because that is all that was available for use in rehabilitation. In the last 10 years, the majority of rehabilitation seedings have been done with about a 50/50 mix of exotics (primarily Siberian wheatgrass and tall wheatgrass) and whatever "natives" (as in native to the Pacific Northwest or Intermountain West, since on-site natives are not generally available) are available, primarily 'Sherman' big bluegrass (*Poa ampla*, used to replace Nevada bluegrass - now just another form of *Poa secunda*), and 'Secar' Snake River wheatgrass and Anatone bluebunch wheatgrass, both of which are options for low-elevation sites. In higher precipitation zones, both 'Goldar' and 'Whitmar' bluebunch wheatgrass have been used. Great Basin wildrye, bottlebrush squirreltail, and streambank wheatgrass are also used. In the last two years the ratio has been approximately 60 to 70 percent native species and the remainder exotics.

In many cases, the techniques used in both rehabilitation and restoration may be the same. The two major goals in most fire rehabilitation projects are to stabilize the soil surface against erosion, and establish a plant community that would be structurally similar to the potential native community and resistant to dominance by invasive species. The seed mix would depend on site potential and the degree of degradation. Restoration of annual grasslands is an evolving science at present and would likely remain so for the foreseeable future, as various approaches are evaluated and adaptively managed on the ground. For now, the general approach often involves a prescribed burn in spring to early fall to remove standing cheatgrass biomass and seed, preferably during the brief period when the plants have cured, but seeds have not dropped. This may be followed by a rest period through the summer and a follow-up treatment with a pre-emergent herbicide or additional prescribed burn during the fall. The area is then seeded with an

appropriate seed mix as described above. Note: this approach is an example and not all-inclusive; many factors are considered when doing restoration for a given vegetation type.

Success criteria are dependent on the objectives and initial condition for the rehabilitated/restored site. In accordance with the ESR manual, a burned area is rested for a minimum of two growing seasons following a fire. After two growing seasons, the site is evaluated by an interdisciplinary team to assess recovery/establishment. The BLM has generally elected to use the criterion that perennial herbaceous cover should be 80 percent of potential (or bare mineral soil within 20 percent of potential) for a given ecological site. Two difficulties often arise: 1) the ecological site potentials have been altered, as stated above, and 2) due to the high extent of degraded landscapes, particularly on the western side of the planning area, suitable comparative reference sites may not be available. It has been noted that cheatgrass is more likely to invade Wyoming big sagebrush/Thurber's needlegrass if areas are overgrazed post-fire. A site may be closed to off-road vehicle use following the fire, if it tends to be a popular site for such activities.